

4.0 BEST MANAGEMENT PRACTICES (BMPs)

Best management practices mean schedules of activities, prohibitions of practices, maintenance procedures and other physical, structural and/or managerial Practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, or waste disposal, or drainage from raw material storage. BMPs are categorized as operational, source control, erosion and sediment control, and treatment.

Appendix B contains a checklist for the selection of best management practices using the WDOE Storm Water Management Manual for the Puget Sound Basin.

4.1 Operating Best Management Practices

Operation BMPs mean schedule of activities, prohibition of practices, maintenance procedures, good housekeeping, and employee training and other managerial practices to prevent or reduce the pollution of waters of the State. Not included are BMPs that require construction of pollution control devices. Discussions concerning the stormwater pollution prevention team, good housekeeping activities, preventative maintenance, spill response, employee training, inspections, and record keeping is presented below.

4.1.1 Storm Water Pollution Prevention Plan Team

The NBF Stormwater Pollution Prevention Team has been established to comply with the requirements of the ISWGP. This team is comprised of two groups: the core team and the assisting group. The core team has representatives from NBF Environmental, Facilities Maintenance, Environmental Operations, and Facilities Engineering. The core team has responsibility for developing the SWPPP and assisting NBF Single-Aisle Airplane Programs Environmental Affairs implement, maintain and modify the storm drain system to comply with the ISWGP. The assisting group is available on an as-needed basis to assist in developing, implementing, maintaining and modifying the SWPPP. Roles and responsibilities for the core team members are:

Environmental Engineering

Responsible for developing the environmental engineering compliance program, including: 1.

The inspection of tanks wastes accumulation areas and air emission sources.

2. Assisting in the identification and resolution of regulatory compliance problems.
3. Supporting monitors, management and environmental control workers with technical issues.
4. Supporting the emergency response team as necessary.
5. Maintain custodial-ship of the NPDES ISWGP and the King County DNR permits for wastewater discharged to the sanitary sewer.

Facilities Maintenance and Environmental Operations

Responsible for: 1) sampling as required by the permit, 2) managing containerized waste for off-site shipment, 3) performing maintenance and inspection of the stormwater system, product storage facilities, and dangerous waste storage areas, and 4) maintain membership on the emergency response team.

Facilities Engineering

Responsible for the planning, design and implementation of physical change to the operations at NBF.

4.1.2 Good Housekeeping

Good housekeeping BMPs are the on-going maintenance and clean-up activities of areas Which have the potential to pollute stormwater. In addition to the inspections discussed in Section 4.1.6, other good housekeeping measures used at NBF to reduce the potential for pollutants from entering the stormwater discharge system are:

1. Catch basins and oil/water separators are cleaned as needed, but a minimum of once every year.
2. Parking lots, tarmacs, open manufacturing support areas, and other open imperious surface areas are mechanically swept on a regular schedule according to priorities.
3. Periodic Emergency Response Drills are conducted.
4. Periodic testing of emergency systems by the Boeing Fire Department.
5. A spill cart is provided for more substantial spills and leaks.
6. Emergency storm sewer covers are located in areas adjacent to storm drains.
7. Manufacturing, loading and unloading, storage and other activities have been relocated indoors when possible.
8. NBF has a contingency plan for site emergencies.
9. Employees working with hazardous materials and dangerous wastes receive appropriate training in procedures to reduce the risk of releases to the environment.
10. A formal sweeping schedule for high particulate areas.

4.1.3 Preventative Maintenance

See Sections 4.1.2 and 4.1.6. The applicable sections of the SMMWW-2005 will be used as guidance documents for the NBF storm drainage maintenance and stormwater treatment maintenance programs. Documentation of past cleaning activities is presented in a separate binder.

There are no recommendations to change or implement any BMPs in this area. Preventative Maintenance (PM) procedures are reviewed and modified as necessary.

4.1.4 Spill Response

BMP Spills of Oil and Hazardous Substances WDOE SMMWW-2005, 40 CFR 302, and 40 CFR 112 are used for the emergency clean up guidance. The following documents detail emergency response procedures at NBF.

- the SPCC plan
- the Comprehensive Contingency Plan

At a minimum copies of these plans are located in the Environmental Affairs office and Boeing Fire Department.

Monthly drills are held for on-site Emergency Response Team personnel, and quarterly drills are held with outside agencies. Also videos, company TV programs, company newspaper articles and Environmental newsletters are used to keep the NBF personnel informed of emergency response measures and small spill/leak cleanup techniques.

The SPCC Plan is a separate plan, which covers oil pollution prevention but does not address the management of dangerous wastes or transportation requirements. However, the emergency reporting flow chart and reference guides are in the Quick Emergency Response Guide. A complete copy of the SPCC Plan is located as a companion with the Comprehensive Contingency Plan in the above locations.

4.1.5 Employee Training

All Boeing and Boeing-contracted personnel who transport, store, treat, dispose, monitor, or manage hazardous materials or hazardous waste on Boeing property are trained in the classroom and on-the-job to ensure that management of hazardous materials and dangerous waste are conducted in conformance with all applicable regulations and Boeing policies and procedures.

BCAG Employee Training and Development maintains records of all hazardous material and dangerous waste management received by employees required by state and federal law. This is

done through the Corporate Training Records System. The Training Record System (TRS) is a company wide database that retains computerized training records.

Information and training for the SWPPP will be included as part of on-the-job training (OJT) for employees at NBF. OJT rosters are forwarded to the training office for inclusion in the computerized training record retention system. Records will be kept on file until closure of the NBF facility, or for three years after termination or reassignment of the employee. This training is required within six months of initial assignment of the employee to a position that routinely exposes the employee to hazardous materials or dangerous wastes.

Additional stormwater pollution control training has been developed for implementation in 1999. This training will include the presentation of tip sheets specific to particular areas of work and a video presentation, which focuses on stormwater pollution prevention. This information will be presented to all employees who currently received "First Responder" training, and the information will be presented during crew or staff meetings.

4.1.6 Inspections

The inspection program at NBF includes regular examination of oil product management units, container accumulation areas, and ancillary equipment by Environmental Control Workers and trained Facilities Services personnel. Inspections are performed according to predetermined written procedures and schedules. They are performed to alert plant personnel to the development of a problem caused by malfunction, equipment deterioration, or operator error. Observations, correction activities, and maintenance activities are recorded on log sheets and kept on file with the NBF Environmental Operations, except for inspections related to transformers. Copies of these files are located in the NBF Environmental Operations Records Office. Transformer inspection records are filed in Primary Power. Inspected items/areas and types of inspections performed are listed below in Table 4.1.6-1.

In addition to the above inspection schedule, wet and dry season inspections, as required by Section S6 of the BGP, are conducted by Environmental Affairs and/or Facilities Maintenance personnel. The SWPPP team reviews the data collected from these inspections. If, after review, any changes to this plan, plant operations and maintenance, or other modifications to stormwater management need to be implemented, The SWPPP team will develop a schedule for implementing the changes.

Table 4.1.6-1
Inspections

Item/Area	Inspection Performed
Container Accumulation Areas	container condition; container used; proper labels attached; indication of corrosion, leaks or other usable sign of spillage; flammable, combustible liquid materials or wastes grounded; non-compatibles separated (daily)
Underground Storage Tanks	condition of cathodic protection systems, aboveground piping shut-off valves, gauges, and liquid-level sensing devices and alarms; interstitial monitoring equipment function, pumps, joints and support structures (weekly)
Aboveground Storage Tanks	condition of external tank shells, piping, gauges, and liquid-level sensing devices and alarms; liquid accumulation in interstitial tank wall space; pumps shut-off valves, joints, and supporting framework (daily and monthly)
Secondary Containment	remove accumulated material; check over-full alarm, if so equipped; condition of dikes and curbs; obstructions or spill material collected in containment trenches and areas (monthly)
Stormwater Lift Stations	remove 2 or more inches of oil, or remove the absorbent boom when 50% or more submerged (monthly)
Oil/Water Separators	level of accumulated oil, removal of 2 or more inches (monthly) for smaller units and quarterly for larger OW/S at Concourse A, B, & C.
Run-off Quality	samples of runoff at various manholes and catchbasins for cleaning activities (annually)

There are no recommendations to change or implement any new BMPs for these activities.

4.1.7 Recordkeeping

In addition to the inspection records and training records discussed in Sections 4.1.5 & 4.1.6, the Renton Environmental Affairs Library includes all of the current records used by the Renton Environmental Affairs Department that are required or needed for support for regulatory compliance. Renton EA Environmental Affairs Record Information System has a complete listing of library files, records, and locations.

Records that have fulfilled their function or have reach the on-site holding times be sent to off-site inactive storage.

4.2 Source Control Best Management Practices

As they are being evaluated and/or designed, all new activities and construction will incorporate the applicable source control Best Management Practices using the WDOE Storm Water Management Manual for Western Washington - 2005 (SWMMWW 2005) and local ordinances, selecting the most stringent whenever possible. The checklist in Appendix B can be used as an aid in the selection of BMPs for source controls.

The following paragraphs describe BMPs for items identified as potential pollution sources in Section 3.2, as well as items from other categories specified in the ISWGP. Items for which the only BMP consists of being located inside of a building where there is no outlet to areas exposed to stormwater are not discussed.

Monitoring performed indicates that discharge standards were being met, which indicates that the source control BMPs are effective.

4.2.1 BMP - Fueling at Dedicated Stations

The most appropriate BMP will be selected from WDOE SMMWW-2005 and local ordinances for the construction of new fueling stations. With the exception of the 4 standby generator diesel tanks, all of the existing oil tank loading and storage areas have been upgraded with drainage to Oil Water Separators.

Building 3-822 Fuel Island and Associated Underground Storage Tank

Unloading and dispensing bulk unleaded gasoline occurs at this location. There is one 3,000 gallon double-walled underground storage tank (UBF-061) located here. Tank filling and fuel dispensing are performed within a single uncovered drainage area. The pump is covered. Drainage from the area flows through catch basin # 309, before flowing into a 37,500-gallon coalescing-plate O/WS. Interstitial space between the tanks is electronically monitored. The fill pipe for the tank is equipped with spill containment, which drain back into the tanks. A magnetic drain cover is available in case of a spill to the pavement.

4.2.2 BMP - Washing and Steam Cleaning of Vehicles, Equipment and Building Structures / Deicing and Anti-Icing Operations – Airports and Streets

Vehicle Wash Activity at Building 3-822

Vehicle washing is performed on a concrete pad located just off the southwest corner of Building 3-822. The water from this operation drains into a central sump with a turned-down elbow that discharges into a 660-gallon OW/S. The Fuel Farm OW/S is listed as one of KCDNR's sample sites. Although it has no monitoring responsibilities in NBF Waste Discharge Permit, Boeing has included this on the quarterly PM for O/WS Inspection Route.

Hydraulic Crane Steam Cleaning Facility and Tank ABF103 at Building 3-354

The current steam clean area is enclosed within Building 3-355 located adjacent to the Hydraulic Shop (3-354 Building). The shed is contained and the liquids are collected in a floor sump, which are pumped to a Dangerous Waste Tank (ABF-160) and shipped off-site or to the NBF WWTP for treatment. Steam clean wastewater is managed as a dangerous waste.

Tank ABF-160 is a 5,000 gallon diked tank and is equipped with a hazardous waste leak detection system. A level gauge records the amount of liquid currently being stored in the tank. When the volume reaches about 65 percent full (3,269 gallons) the tank reaches the capacity of the secondary containment. At this level an alarm is activated. This alarm consists of a series of red lights identifying the following:

1. tank secondary containment alarm
2. pump running
3. tank 85 % full
4. sump secondary containment alarm

Notification procedures with telephone numbers are posted in case of an alarm. Components of the waste system are managed in accordance with the Ecology Dangerous Waste Regulations (WAC 173-303-640), including periodic integrity assessments and daily inspections.

Aircraft and Vehicle Washing Facility and KCDNR Discharge at C-13 Wash Stall.

The C-13 Wash Stall is used mainly for aircraft washing on delivery of new aircraft to customers. This area is used infrequently during freezing weather for de-icing. Boeing Field Fire trucks are also washed in the Wash Stall. Occasionally aircraft are washed after conducting dye test to determine airflow characteristics on new test models. A binamic coating is applied to the belly, side fuselage and leading edges of the elevators of the aircraft. Flight test involves releasing dye during flight to determine air dynamics of the air flowing over and around the appendages of the aircraft.

The aircraft and fire engines are washed with a biodegradable soap solution where by the liquids are collected in a trench drain that flows to a 250 gallon sump with a turned-down elbow. An oil boom is placed within the concrete sump to collect any floating oil/grease content. A record sheet is provided for users to log in date and meter reading on fresh water usage. Although this is a non-required Self-Monitoring discharge it is visually inspected periodically each month and quarterly sampled for pH and fog. The total volume of discharge per month and quarterly analytical data is submitted to KCDNR on Monthly Monitoring Report.

The discharge from C-13 wash stall is to the sanitary sewer system, but a shut-off valve has been installed on the outlet, that allows any waste that does not meet discharge standards to be collected and transported to the NBF WWTP for treatment. In addition, the Boeing lift station located down stream from this unit at Building 3-858, which has a wet well storage capacity of

several thousand gallons. This acts as a secondary backup system, which will collect any non-acceptable waste prior to being discharged into the East Marginal Way South 42-inch Metro Interceptor Line.

4.2.3 BMP - Loading and Unloading Areas for Liquid and Solid Materials

The most appropriate BMP will be selected from the WDOE SMMWW - 2005 and local ordinances for construction of facilities for these operations. With the exception of the 4 standby generator diesel tanks that are topped off once a year and the BMPs discussed below, all of the bulk liquid loading areas are contained or are drained to treatment facilities. Oil-water separators at the Aviation Fuel Farm, Fuel Test Apron and 3-368 Building Wind Tunnel tank protect all of the Flight Line. The wastewater treatment plant at the 3-369 Building now has an unloading pad that collects the stormwater, which is pumped to a 25,000-gallon storage tank for treatment. (At the direction of the King County Department of Natural Resources, there is a unique BMP for this pad that appears at the end of this section).

In addition to current BMPs that are in place and have been discussed in previous sections, the following BMPs are being implemented at NBF:

1. route the tank loading area of the 3-374 to the unused OWS from the 3-390 Building (1997)

Receiving Area at Building 3-800, Door S-2

This area is used to unload and store small quantities of janitorial supplies and food to use at the cafeteria located on lower floor of this building. Inventory is moved indoors immediately after delivery.

A storm drain (# 277 B) is located in the middle of the loading dock, which is equipped with a trap to remove oil and sediment. A magnetic drain cover is located in the area in case of a spill. Only a small amount of material unloaded here is considered a potential pollutant. All materials are appropriately packaged and handled so that the potential for spills is reduced.

Receiving Area at Building 3-801, Door W-4

This area is used to unload and store small quantities of photographic chemicals, aerosol cans of paint and degreasers, petroleum distillate, hydraulic oil and janitorial supplies prior to use at locations throughout this building. Inventory is moved indoors immediately after delivery.

A storm drain (# 285 A) is located west of the building, which is equipped with a trap to remove oil and sediment. A magnetic drain cover is located in the area in case of a spill. All materials are appropriately packaged and handled so that the potential for spills is reduced.

Receiving Area at Building 3-818, Door S-2

This area is used to unload and store small quantities of isopropyl alcohol, aerosol cans of paints, MPK, adhesives and janitorial supplies prior to use at locations throughout this building. Inventory is moved indoors immediately after delivery.

A storm drain (# 447) is located south of the building, which is equipped with a trap to remove oil and sediment. A magnetic drain cover is located in the area in case of a spill. All materials are appropriately packaged and handled so that the potential for spills is reduced.

Receiving Area at Building 3-822, Door W-3

This area is used to unload and store small quantities of truck washing detergents and janitorial supplies. Inventory is moved indoors immediately after delivery.

A storm drain is located west of the building (# 308), which drains to the large 37,500 gallon oil water separator (O/WS-3C) located of the SE corner of the 3-818 Building. A magnetic drain cover is located in the area in case of a spill. All materials are appropriately packaged and handled so that the potential for spills is reduced.

Receiving Area at Building 3-369, Door S-5

This area is used to unload 55 gallon drums of "Halt" foam suppressant, Sulfuric Acid and turbine oil, besides small quantities of janitorial supplies, laboratory chemicals, buffer solutions and adhesives. A special unloading and loading pad was constructed that has a central sump for the collection of any spilled materials and contaminated storm water. The water collected by this process is pumped into one of the 25,000-gallon storage tank for chemical processing along with the paint hanger aircraft wash water.

At Door S-3: Bulk Alkosol and Hydrogen peroxide are unloaded from a tanker truck on to designated storage tanks. The Alkosol storage tank (ABF-126) is located inside the building and holds 5,000 gallons of product. The Hydrogen Peroxide tank (500 gallons) is located outside the building, but inside a spill containment area. Paint thinner (70/30 % mix of methyl propyl ketone and methyl ethyl ketone) is also unloaded in this area (two 550-gallon tanks). All unloading is performed on another concrete pad with a center sump. Any spillage and contaminated storm water will flow into this concrete sump that is plumbed to the main sump in front of the wastewater treatment plant.

Door S-3 and S-5 is utilized for the unloading of paint and paint related material for the two paint hangers within Building 3-369. Inventory is moved inside to special fireproof storage areas immediately after delivery. All materials are appropriately packaged and handled so that the potential for spills is reduced.

The North container storage shed is used to unload pallets of 50-pound bags of lime, sodium meta-bisulfite and ferrous sulfate. Inventory is moved inside the shed by a forklift. A storm

drain (# 633) is located to the west of the area that would facility drainage from the unloading area. It is equipped with a trap to remove oils and sediment.

Receiving Area at Building 3-380, Door S-5

This is the main receiving area used to unload and store small quantities of enamel paints and thinners, besides 55-gallon drums of Alkasol. There is a magnetic storm drain cover available in case of a spill, located on the outside of the building.

Doors W-4 and W-6 are used to load dangerous waste material stored in the accumulation area, such as 55-gallon drums of:

- Alodine rags and debris
- Paint stripping rags contaminated with Methylene chloride and sodium chromate
- Spent adhesive paints and resins containers
- Rinse water with contaminated paint stripper (Methylene chloride & sodium Chromate)
- Chemidize 72nd (Nitrotolune sulfonic acid): new product

Unloading takes place in an uncovered area. A catch basin is approximately 50 feet away from the area and there is a magnetic storm drain cover available in case of a spill.

At Door W-7 is used to unload 55 gallon drums of new chemical solutions. This room is used for drum storage.

At Door W-2 bulk Alkosol (ethylene glycol monobutyl ether) and Alodine 1000 acid (mixture of Chromic and Potassium fluozirconite acids) are unloaded from a tanker truck to designated storage tanks. The Alksol holds 6,000 gallons and the Alodine tank contains 1,000 gallons. The tanks are bermed to contain any spillage. Unloading takes place in an uncovered area outside the building. A catch basin is approximately 50 feet away from the area and there is a magnetic storm drain cover available in case of a spill.

At Door N-4 bulk AFFF (fire fighting foam) is unloaded from a tanker truck to designated storage tanks.

Receiving Area at Building 3-350, Door S-1

This area is used to unload and store 55-gallon drum petroleum products, motor oil, gear oil, and various small quantities of janitorial and cleaning compounds. Inventory is moved inside the aluminum storage building immediately after delivery, that have a built-in containment system for collection of any spillage.

Unloading taken place on an uncovered area. Two catch basins (#110 & 109B) are located within 50feet from the area. Only a small amount of material unloaded here is considered a potential pollutant. The smaller quantities of janitorial and cleaning supplies are appropriately packaged and handled so that potential for spills is reduced.

Receiving Area at Building 3-365, Door W-1

This area is used to unload and store small quantities of enamel traffic paints, latex paints and thinners. Inventory is moved inside two storage buildings immediately after delivery. Two outside flammable storage cabinets contain 55-gallon drums of mineral spirits and lacquer thinner. The storage cabinets are sitting on top of metal containment for collection of any spillage.

Storm drains are not available in this area. The topography of this area is sloped to facilitate all drainage, spillage and storm water runoff to the west and into the City of Seattle flume. All materials are appropriately packaged and handled so that the potential for spills is reduced.

Receiving Area at Building 3-840, Door S-1

This area is used to unload and store 55 gallon drums fire fighting foam products, besides spent or out dated fire extinguishers that are stored in tub skids. Unloading takes place in an uncovered area. All drums of the fire fighting foam are placed in a storage section that has roll-up doors and spill containment area greater than 110 percent of the largest container.

Door N-6 is used to unload 55-gallon drums of petroleum products (gear grease and motor oils) for maintenance on the fire trucks. Also small quantities of aerosol enamel paints, cleaners, adhesives and thinners are received in this area and moved inside to flammable storage cabinets immediately after delivery.

Storm drains are available in this area. This is a combined drainage system (storm and sanitary). All storm water around the Fire Station flows to Building 3-858 (Boeing lift station). Any spillage will be captured in the wet well of this lift station. Only a small amount of material unloaded here is considered a potential pollutant. All materials are appropriately packaged and handled so that the potential for spills is reduced.

4.2.4 BMP S1.40 - Liquid Storage in Above-Ground Tanks

BMP S1.40 and local ordinances, selecting the most appropriate whenever possible will be used for the new activities and construction for these operations. All tanks currently meet these requirements.

Fuel Farm

The four double-walled storage tanks identified below are equipped with leak detectors. These tanks are located on the West Side of the fuel farm. If any tank did rupture, spillage would flow

to catch basin # 458 and then be captured in the large downstream oil-water separator 3-C # 640 (37,000 gallons), located off the southeast corner of Building 3-818.

1. ABF-108: contains 30,000 gallons of Jet A Fuel
2. ABF-109: contains 30,000 gallons of Jet A Fuel
3. ABF-154: contains 30,000 gallons of Jet A Fuel
4. ABF 155: contains 30,000 gallons of Jet A Fuel

Tank ABF-110 is adjacent to the Jet A Fuel tanks and holds 6,000 gallons of waste fuel, which is generated from aircraft defueling activities on the flight line. This tank is doubled lined and has a pneumatic gauge. If a major rupture did occur, the spillage would flow into the same catch basin and oil water separator as previous described.

Diesel Fuel Tank ABF-118 at 3-818 Building

This is an 11,000-gallon above ground tank located at door N-1, which is used to fuel an emergency generator. The storm drains servicing this area have turned-down elbows or oil traps. There is a magnetic drain cover located nearby if fuel is spilled. Also, drainage from these sumps flow through King County Lift Station # 431, locate north of 3-369 Building, which will collect any spillage prior to being discharged into the Duwamish River at Slip # 4.

PS-300 Tanks ABF-139 & 156 at Building 3-374 Door N-1

ABF-139 is a 10,000-gallon above ground tank and ABF-156 holds 20,000 gallons. These above ground tanks are located on the East Side of 3-374 Building, which are used to provide fuel to the boilers. . These tank are doubled lined and has an interstitial space monitor for release detection. The tanks are positioned on a concrete diked pad that facilitates all storm water runoff to shut off valve. The containment area is inspected periodically and the storm water is released after a visual inspection. If a ruptured tank or spillage did occur, the drainage would flow into O/WS – 1-C that has a capacity of 25,200 gallons.

Jet Fuel Tank ABF-145 at Building 3-368 (Jet Propulsion Lab)

This is a 12,000 gallon above ground tank on a concrete pad located SE of the 3-368 Building, which is used to fuel the wind tunnel engine. The tank is doubled lined and has an interstitial space monitor for release detection. The tank sits on a concrete pad that facilitates all storm water runoff to one catch basin. If a major rupture did occur, the spillage would flow and be captured in the large oil-water separator at A-5 (4,500 gallons) located in on Concourse A. Drainage from this oil-water separator flows to King County Lift Station # 431, located north of 3-369 Building. This acts as a secondary backup or oil-water separator system prior to being discharged into the Duwamish River at Slip # 4.

Fuel Farm North of Building 3-355 (supports Fuel Test Pad)

Thesix double-wall storage tanks identified below have leak detectors. These tanks are located in a concrete-diked area north of 3-355 Building, which supplies fuel to the Fuel Test Apron.

1. ABF-148: contains 15,000 gallons of Jet Fuel
2. ABF-149: contains 15,000 gallons of Jet Fuel
3. ABF-150: contains 15,000 gallons of Jet Fuel
4. ABF-151: contains 5,000 gallons of Jet Fuel
5. ABF-152: contains 5,000 gallons of Jet Fuel
6. ABF-153: contains 5,000 gallons of Jet Fuel

If any tank did rupture, spillage would flow to the 6,000 gallon coalescent plate oil water separator in the Fuel Test Apron, which has an oil spill retention tank of 60,000 gallons.

Jet A Fuel Tank ABF-144 at 3-322 Building

This is a small 100-gallon tank that is elevated about 10 feet above ground that services an jet fuel burn test on FAA panels in the 3-322 Building. If spillage did occur, most of the fuel would be absorbed in the dirt flowerbed directly underneath the tank. It is also possible that spillage would also flow into catch basins # 194 and 629 that drain to newly installed 3,830-gallon oil water separator (O/WS # 612) located in the street between Buildings 3-315 and 3-626.

Jet A Fuel Tank at 3-304 Building Door E-9

There was a 1,000-gallon fuel tank located in the Liquid Calibration Laboratory/ Fuel Properties Laboratory. The 3-304 Building was demolished during the summer of 2001 and the tank removed.

Diesel Tank ABF-161 at Sub-Station #1875

This is a 200-gallon diked tank and is equipped with a hazardous waste leak that provides fuel to an emergency generator for this Sub-Station. This tank is also located inside a concrete containment area, which provides additional protection, if a ruptured did occur. A valve is located at the NE corner of the containment pad, which is always in the closed position.

Diesel Tank ABF 130 at Building 3-390

This 550-gallon tank that provides fuel to an emergency generator. The tank is diked and has an interstitial space monitor for release detection. If a major rupture did occur, the spillage would flow into the catch basins between the north side of the 3-380 Building and Concourse A. The diesel fuel will be captured in the King County Lift Station # 431, located north of 3-369 Building. This acts as a secondary backup or oil-water separator system prior to being discharged into the Duwamish River at Slip # 4.

Diesel Tank ABF 123 at Building 3-380

This is a 275-gallon double-walled tank and is equipped with an interstitial space monitor for release detection. This provides fuel to an emergency generator. If a major rupture did occur, the spillage would flow into the catch basin along the West Side of the 3-380 Building and be captured in the King County Lift Station # 431, located north of 3-369 Building. This acts as a secondary backup or oil water separator system prior to being discharged into the Duwamish Waterway at Slip # 4.

Diesel Tank ABF 142 at Building 3-369

This is a 550-gallon tank and provides fuel to an emergency generator. The tank is diked and has an interstitial space monitor for release detection the tank sits on a concrete pad that facilitates all storm water runoff to one catch basin. If a major rupture did occur, the spillage would flow into the catch basin and be captured in the King County Lift Station # 431, located north of 3-369 Building. This acts as a secondary backup or oil-water separator system prior to being discharged into the Duwamish River at Slip # 4.

4.2.5 BSM S1.50 - Container Storage of Liquids, Food Wastes, or Dangerous Wastes

BMP S1.50 and local ordinances, selecting the most stringent whenever possible, will be used for the new activities and construction for these operations.

4.2.6 BSM S1.60 - Outside Storage of Raw Materials, By-products or Finished Products

BMP S1.60 and local ordinances selecting the most appropriate whenever possible will be used for the new activities and construction for this operation.

Storage at Building R-4700, North Yard

This is an aluminum sheet metal shed where lacquer thinner products are stored. Container size does not exceed 55 gallons. The shed is enclosed on three sides and a roof to prevent rainfall from entering the storage area. The north side has a locking metal sliding gate and is open. The floor of the shed is sloped to the rear to a trench drain. This basin is large enough to contain 110 percent of the largest container volume, plus an additional amount for rainwater. The nearest storm drain is trench drain that runs along the north side of the shed, which will take all spillage to O/WS-1A (#132).

Storage at Building 3-342, North Yard

This is a shed where gear oil and petroleum products are stored. It is covered with a roof and a cyclone fence encloses the perimeter. Container size does not exceed 55 gallons. The floor of the shed has a berm on three sides, but is open to the north. The storm drain is trench drain that runs the entire length of the building along the north side, which will take all spillage to O/WS-1A (#132).

Small Storage Shed between Building 3-342 & 3-343, North Yard

This is an aluminum sheet metal shed where recycled oil products is collected and stored. The shed is enclosed on three sides and has a roof to prevent rainfall from entering the storage area. Container size does not exceed 55 gallons. The floor of the shed is sloped to the rear with a trench drain. This basin is large enough to contain 110 percent of the largest container volume, plus an additional amount for rainwater. The nearest storm drain is catch basin # 133, which will take all spillage to O/WS-1A (#132).

Storage at Building 3-343, North Yard

This is a shed where fuel additives, turbo oil and petroleum products are stored. Container size does not exceed 55 gallons. It is covered with a roof and a cyclone fence encloses the perimeter. The floor of the shed has a berm on three sides, but is open to the north. The nearest storm drain is trench drain that runs the entire length of the building along the north side, which will take all spillage to O/WS-1A (#132).

Small Storage Shed between Building 3-343 & 3-357, North Yard

This is an aluminum sheet metal shed where petroleum products are stored. The shed is enclosed on three sides and a roof to prevent rainfall from entering the storage area, but is open on the north side. Container size does not exceed 55 gallons. The floor of the shed is sloped to the rear to a trench drain. This basin is large enough to contain 110 percent of the largest container volume, plus an additional amount for rainwater. The nearest storm drain is trench drain that runs along the north side of the shed, which will take all spillage to O/WS-1A (#132).

Storage at Building 3-356, North Yard

This is a shed where hydraulic oil, turbo oil and other petroleum products are stored. Container size does not exceed 55 gallons. The floor of the shed is a basin large enough to contain 110 percent of the largest container volume, plus an additional amount for rainwater. A dry sump (3 ft wide x 6 ft deep x 30 ft long) is located inside this storage unit to collect any spillage or miscellaneous rainwater. The shed is open on the West Side, but has a plastic curtain to keep rainwater out. The nearest storm drain is #134, which will take any spillage to King County Lift Station # 431, located north of Building 3-369. This acts as a secondary backup or oil-water separator system prior to being discharged into the Duwamish River at Slip # 4.

Storage at Building 3-357, North Yard

This is a shed where compressed gas cylinders (nitrogen & carbon dioxide) are stored. The shed is enclosed on three sides with a roof to prevent rainfall from entering the storage area. The East Side is open for forklift access. The floor of the shed has a berm on three sides, but is open to the east. Since this shed only stores compressed gas cylinders, no liquid waste or spillage is associated with this building. The nearest storm drain is #134, which will take any spillage to

King County Lift Station # 431, located north of Building 3-369. This acts as a secondary backup or oil water separator system prior to being discharged into the Duwamish River at Slip # 4.

South Storage Shed at Building 3-369, WWTP

This is an aluminum sheet metal shed where buffer solution, adhesives, spare parts for pumps and treatment plant equipment is stored. Container size is 1 quart plastic bottle packaged in cardboard boxes. The shed is enclosed on three sides with a roof to prevent rainfall from entering the storage area. The shed is open on the north side, but has a black canvas curtain to keep rainwater out. Any spillage will flow to the sump in the loading pad. This waste will then be pumped into the WWTP storage tanks for chemical processing.

Middle Storage Shed at Building 3-369, WWTP

This is an aluminum sheet metal shed where turbine oils; foam suppressant and sand used in the wastewater treatment plant filters are stored. Container size does not exceed 55 gallons. The shed is enclosed on three sides with a roof to prevent rainfall from entering the storage area. The shed is open on the north side, but has a black canvas curtain to keep rainwater out. Any spillage will flow to the sump in the loading pad. This waste will then be pumped into the WWTP storage tanks for chemical processing.

North Storage Shed at Building 3-369, WWTP

This is an aluminum sheet metal shed where Sodium meta-bisulfite and oil absorbent material is stored. This material is a solid packaged in 50-pound bags. The shed is enclosed on three sides with a roof to prevent rainfall from entering the storage area. The shed is open on the north side, but has a black canvas curtain to keep rainwater out. Any spillage will flow to the sump in the loading pad. This waste will then be pumped into the WWTP storage tanks for chemical processing.

Corrosive Storage Shed at Building 3-369, WWTP

This is steel shed where a 98 percent sulfuric acid solution is stored. The floor of the shed is a basin large enough to contain 110 percent of the largest container volume. This material is received in 55-gallon plastic drums. The shed is locked and enclosed on all sides with a roof to prevent rainfall from entering the storage area. Any spillage will flow to the catch basin # 633.

Container Storage Shed at Building 3-369, WWTP

This is an aluminum sheet metal shed where lime and ferrous sulfate material is stored. This material is a solid packaged in 50-pound bags. The shed is enclosed on all sides with a roof to

prevent rainfall from entering the storage area. Since this shed only stores dry powder products. No liquid waste or spillage is associated with this building.

4.2.7 BMP Outside Manufacturing Activities

There are no outside manufacturing activities at NBF. However, some plant processes have the potential to emit and deposit particulate matter on roofs or ground surfaces and become potential water contamination sources if not properly managed. These processes are regulated by the Puget Sound Air Pollution Control Agency (PSAPCA), through an air operating permit (AOP).

The permit requires control equipment for particulate emissions, and specifies periodic inspections and maintenance for the control equipment and the generating processes. Regulated particulate sources and the associated control equipment are listed in Table 3.2-8. Measures required are considered adequate to prevent stormwater contamination from these sources.

4.2.8 BMP Spills of Oil and Hazardous Substances (see Section 4.14)

4.2.9 BMP Landscaping and Lawn/Vegetation Management

Boeing subcontracts the activities associated with these operations. Standard contract language requires that the contractor adhere to all applicable federal, state and local regulations regarding pest management.

4.2.10 BMPs Maintenance of Stormwater Drainage and Treatment Facilities / Illicit Connections to Storm Drains

See Section 4.1.2 and Section 4.1.3.

4.2.11 BMPs Soil Erosion and Sediment Control at Industrial Sites / Dust Control at Manufacturing Areas

Street sweeping at this facility and flight line are done on a frequent, regular basis in accordance with the BMP. Waste from this operation is deposited in a unit specifically designed to accept this waste. Wastewater from this operation is permitted for discharge to the sanitary sewer at North Boeing Field. Solids from this operation are placed in garbage/refuse dumpsters for disposal.

4.3 Construction BMPs

Construction Stormwater General Permits will be obtained for those projects disturbing greater than one acre. For smaller projects, applicable erosion control BMPs will be implemented, such as the Soil Erosion and Sediment Control at Industrial Sites.

4.4 Erosion Control BMPs

NBF is nearly 100 percent covered by impervious materials, such as concrete, asphalt, and building roofs. There is virtually no stormwater flow from the site, which is not contained within the storm drain system. The northern portion of NBF stormwater is collected into two drainage systems, which flow underneath East Marginal Way SE and discharge into Slip 4 of the Duwamish River through two pipes known as Outfall # 001 (30 inch diameter) and # 002 (60 inch diameter). These pipes discharge a lined bank with riprap to reduce possible erosion.

Outfall # 002 drainage area encompasses less than 5 acres. It is located in the northwest corner of NBF and receives storm water from Markov Site (3-027 Building) and a flume from the old City of Seattle Georgetown Steam Plant Generating Station.

Outfall # 001 drainage area consists of 132 acres and receives stormwater from Concourse A, B & C, west taxiways, Jet Propulsion area, Power Plant, paint hangers, fuel farm and parking lots.

4.5 Treatment Best Management Practices

Treatment BMPs means BMPs that are intended to remove pollutants from storm water. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, and constructed wetlands. WDOE SWMMWW 2005 and local ordinances selecting the most appropriate when possible, will be used for determining run-off treatment BMPs when pollutants cannot be eliminated from or controlled in storm water by the use of source controls or operating BMPs. Four CP separators have been installed on Concourse A in 1996 and two more on Concourse B in 1997 to complete the coverage of all Flightline areas with oil/water separators.

4.6 Innovative Best Management Practices

Innovative BMPs means innovative treatment, source control, reduction or recycle, or operational BMPs beyond those identified in WDOE SWMMWW 2005 that are used to help achieve the objectives.

4.7 Best Management Practice Implementation Schedule

Data gathered at NBF over the last 15 years indicate this site run-off typically meets water quality standards. The additional oil/water separators will improve the already good protection of the storm water runoff. Those BMPs being evaluated in Section 4.2 may be included in the plan following evaluation in the future.